

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
15 September 2005 (15.09.2005)

PCT

(10) International Publication Number  
**WO 2005/086444 A1**

(51) International Patent Classification<sup>7</sup>: **H04L 27/00**,  
27/34, H04B 7/185

(21) International Application Number:  
PCT/US2004/004702

(22) International Filing Date: 19 February 2004 (19.02.2004)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant (for all designated States except US): **THOMSON LICENSING S.A.** [FR/FR]; 46, Quai A. LeGallo, F-92648 Boulogne Cedex (FR).

(72) Inventor; and

(75) Inventor/Applicant (for US only): **KOSLOV, Joshua**  
[US/US]; 10 Fairway Drive, Hopewell, NJ, 08525 (US).

(74) Agents: **TRIPOLI, Joseph, S. et al.**; 2 Independence Way, Princeton, NJ 08540 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM,

AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

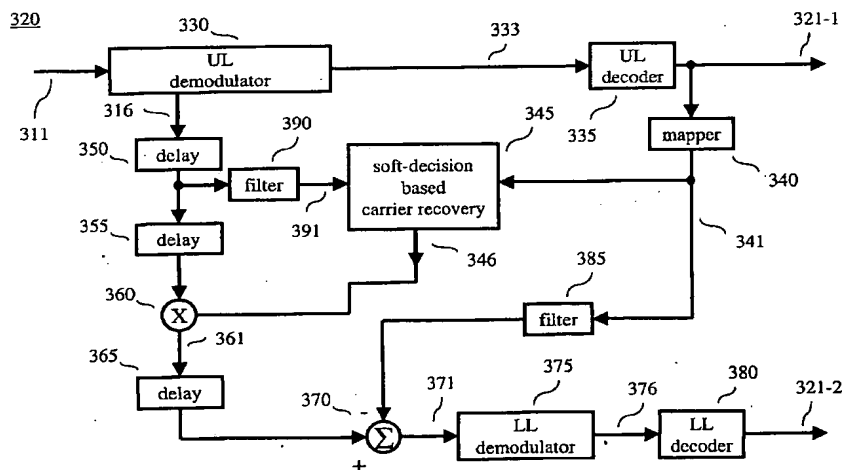
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

- with international search report
- with amended claims

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: METHOD AND APPARATUS FOR CARRIER RECOVERY IN A COMMUNICATIONS SYSTEM



(57) Abstract: A satellite communications system comprises a transmitter, a satellite transponder and a receiver. The transmitter transmits an uplink layered modulation signal having an upper layer and a lower layer to the satellite transponder, which broadcasts the layered modulation signal downlink to one, or more, receivers. The receiver receives the layered modulation signal (the received signal) and performs demodulation and decoding of the lower layer signal component thereof by using a recovered carrier to derotate the received signal, wherein the recovered carrier is developed by a carrier recovery process driven by soft decisions with respect to the upper layer signal component of the received signal.

WO 2005/086444 A1